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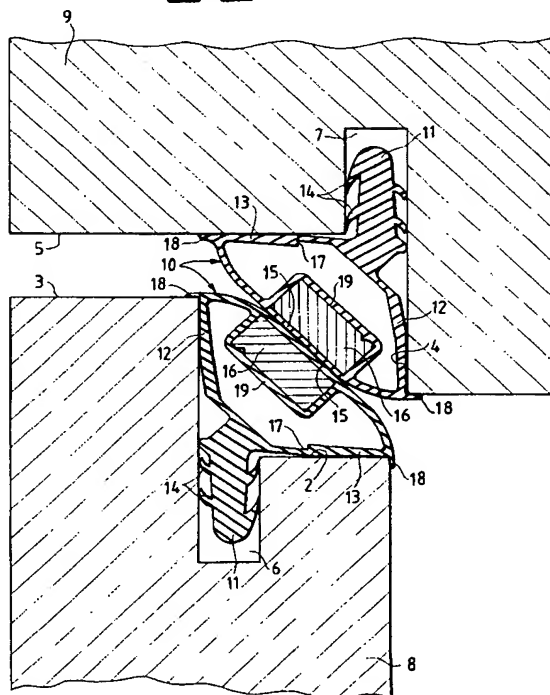
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**Gasket in particular for internal doors.**

The invention provides a gasket for internal doors, such as leaf doors interposed between communicating spaces within a building and composed of a door frame and a door leaf, characterised by comprising, for fixing said gasket to said door in the corner region in which contact occurs between the door frame and door leaf when in the closed position, a base element from which there extend in diverging directions two lateral walls having a certain rigidity but able to yield elastically, and by compression abut against those door parts contained within said corner region, the ends of said lateral walls of the gasket being joined together by a convex upper wall which in its central position assumes the form of a tubular seat for a strip of magnetic material, which is hence contained within the space defined between said base element, said lateral walls of a certain rigidity and said convex upper wall which joins them together.

**Fig.3**



This invention relates to a gasket for internal doors, such as leaf doors interposed between communicating spaces within a building and composed of a door frame and a door leaf.

It is well known that in internal doors of this kind there is generally provided a handle-operated spring latch to keep the door leaf in contact with the door frame when in its closed position.

A main object of the present invention is to eliminate the spring latch type of fastener in an internal door of a building.

It is apparent that attaining such an object would result in considerable simplification both for the door manufacturer, who would no longer need to apply the fastener, and for the user, who would no longer have to operate such a device for closing and opening the door.

This simplification in door opening and closure would for example be particularly advantageous for the disabled, for whom operating the handle can be a real problem.

In solving the aforesaid problem and achieving further advantages which will be more apparent hereinafter, the present invention provides a gasket for internal doors, such as leaf doors interposed between communicating spaces within a building and composed of a door frame and a door leaf, characterised by comprising, for fixing said gasket to said door in the corner region in which contact occurs between the door frame and door leaf when in the closed position, a base element from which there extend in diverging directions two lateral walls having a certain rigidity but able to yield elastically, and by compression abut against those door parts contained within said corner region, the ends of said lateral walls of the gasket being joined together by a convex upper wall which in its central position assumes the form of a tubular seat for a strip of magnetic material, which is hence contained within the space defined between said base element, said lateral walls of a certain rigidity and said convex upper wall which joins them together.

The characteristics and advantages of the present invention will be more apparent from the ensuing description of one non-limiting embodiment thereof given with reference to the figures of the accompanying drawings.

Figure 1 is a schematic perspective view of a leaf door located within a building between two intercommunicating spaces, shown with the door leaf open with respect to the door frame.

Figure 2 is a sectional perspective view of a gasket mounted on the door shown in Figure 1.

Figure 3 is a cross-section through those parts of the closed door on which gaskets according to the invention are mounted.

With reference to the said figures, a gasket 10 according to the invention comprises a base ele-

ment 11 for fixing the gasket to the door parts, namely the door frame and the door leaf.

The fixing base element comprises flexible ribs 14 which fix the gasket by virtue of their insertion into suitable grooves formed in the corner region of the door parts concerned, for receiving this base element.

From the base element 11 there extend in diverging directions two lateral walls 12 and 13 having a certain rigidity but by compression able to abut against those door parts contained within said corner region.

The upper ends of said lateral walls of the gasket are joined together by a convex upper wall 15 which in its centre assumes the form of a tubular seat 19 into which there is inserted a strip 16 of magnetic material, which is thus contained within the space defined overall by said base element 11, said lateral walls 12 and 13 of the gasket and said convex upper wall 15 which joins these latter together.

As can be seen from Figure 1, gasket pieces 10 can be mounted both along the door frame 9 and along the perimeter of the door leaf 8 in mutually facing positions.

If for example a gasket piece 10 is mounted on the vertical upright opposite the upright on which the door leaf 8 is hinged, an analogous gasket piece (magnetized with opposite polarity) is mounted along the corresponding corner of the door leaf.

In Figure 1 gasket pieces are provided along all three sides of the door frame and of the door leaf.

In a modification a further gasket piece can be provided along the lower corner of the door leaf, with an analogous corresponding gasket piece along the threshold bounded by the door.

Figure 3 shows the relative positions of the gaskets according to the invention when the door is closed. Figure 3 shows specifically a gasket 10 mounted along the corner region of a door frame 9 and a corresponding gasket mounted along the corner region of a door leaf 8.

As can be seen in Figure 3, when in its operating position the gasket 10 is mounted within grooves 6 and 7 formed by milling in the corner region (female) of the door leaf 8 and in the corner region (male) of the door frame 9 respectively. The gasket is fixed by inserting the base element 11. When in this position the lateral walls 12 and 13 of the gasket pieces 10 are held in their operating position by the compression of the walls 12 and 13 against the walls 2, 3, 4 and 5 of the door parts, so as to form a seal by interference between the gasket and the door parts. In Figure 3 it can be seen that closure is achieved by magnetic attraction between the magnetic material inserts contained in the tubular seats of the facing gaskets,

these being magnets of opposite polarity.

To obtain greater flexibility of the lateral walls 12 and 13 of the gasket, which are relatively rigid but must be able to deform by compression in order to be retained in their operating position, at least one of said lateral walls can be formed with a thickness variation as can be seen in the lateral walls of Figure 3 at the step 17.

The convex wall 15 which joins said lateral walls of the gasket together terminates upperly with a pair of projecting flanges 18, which contribute to retaining the gasket in position against the walls in the corner region of the door parts, as can be seen in Figure 3. As shown in this figure, said projecting flanges 18 are able to abut against the corners of said walls 2 and 3 in the case of the door leaf 8, because this normally has a feminine configuration in the closure region.

In contrast, at the corner of the door frame 9, which is normally of male configuration, one of the flanges 18 abuts against the corner of the wall 4 of the door frame, whereas the other deforms by compression against the flat wall 5 of the door frame.

The configuration of the gasket according to the invention is such that when the door leaf and door frame are being brought closer together during closure there is a progressive mutual sliding of the convex upper walls 15 of the two mutually facing gaskets by the effect of the magnetic attraction, until when in the closed position they mutually abut at the magnetic inserts of opposite polarity in the final position shown in Figure 3.

Figure 3 shows the most simple embodiment of the invention.

Modifications can however be provided, such as that shown in Figure 2, in which a flat metal blade 20, for example of aluminium, is contained in the space between the magnetic strip 16 and its tubular seat 19 in the gasket, in a position opposite the interface between that gasket and the corresponding gasket provided on the other door part. A further modification of this embodiment is also shown in Figure 2 and is represented by the insertion of a rod 21, again preferably of metal, inserted into the upper part of the fixing base element 11.

The purpose of these metal blades, rods or possibly other devices of different shape, is to prevent any longitudinal traction occurring during the mounting of the gasket if by insertion, or to prevent the gasket being elongated if mounted by rollers or the like. This prevents any possibility of gasket shrinkage with corresponding shortening, when released (by cessation of the traction force) after mounting. In this respect, the metal blade or rod forms a reinforcement which is rigid against traction but is flexible in a transverse direction to allow the gasket to adapt to the door frame or door

leaf.

A further modification to the gasket of the invention is represented by its geometry. As can be seen in the examples shown in the figures, the gasket can comprise as the fixing base element a foot positioned obliquely to the main axis of symmetry of the gasket.

However this foot can also coincide with this axis of symmetry.

The gasket can also be symmetrical about its main axis.

The lateral walls of the gasket can either be different, as in the figures of the accompanying drawings, or be identical.

Instead of the foot, any other suitable means for connection to the door parts can be provided as the fixing base element.

From the foregoing it is apparent that the invention enables magnetic-type fastening to be achieved for internal doors, so making it possible to eliminate handle-type spring latches.

This advantage represents an evident constructional simplification for the door manufacturer, together with considerably simplified operation for the user in that the handle opening and closing movement is avoided.

As initially stated, this is a particular advantage for the disabled in that a door provided with a magnetic gasket according to the invention can be opened by merely pushing or pulling without the need to operate a handle.

The magnetic gaskets of the invention also have the further advantage of maintaining the door leaf and door frame in constant contact when in the closed position, so eliminating vibration or quivering which can be annoying in terms of noise in addition to prejudicing the seal.

The acoustic seal provided by the gasket of the invention is also constant with time because of the permanent and active action of the closure magnet.

A further advantage of the gasket of the invention is its possible use in sliding doors comprising a door end-of-travel stop system, in order to eliminate hooks or other systems for fixing the sliding door to the door frame.

## Claims

1. A gasket for internal doors, such as leaf doors interposed between communicating spaces within a building and composed of a door frame and a door leaf, characterised by comprising, for fixing said gasket to said door in the corner region in which contact occurs between the door frame and door leaf when in the closed position, a base element from which there extend in diverging directions two lateral

walls having a certain rigidity but able to yield elastically, and by compression abut against those door parts contained within said corner region, the ends of said lateral walls of the gasket being joined together by a convex upper wall which in its central position assumes the form of a tubular seat for a strip of magnetic material, which is hence contained within the space defined between said base element, said lateral walls of a certain rigidity and said convex upper wall which joins them together.

contact occurs between the door frame and door leaf when in the closed position, to house said gaskets.

2. A gasket as claimed in claim 1, characterised in that said convex upper wall extends beyond the upper ends of said gasket lateral walls by means of two projecting flanges.
3. A gasket as claimed in claim 1, characterised by being symmetrical about its main axis defined by the base element used for its fixing.
4. A gasket as claimed in claim 1, characterised by being asymmetrical about its main axis.
5. A gasket as claimed in claim 1, characterised in that said lateral walls of the gasket are identical.
6. A gasket as claimed in claim 1, characterised in that in at least one of said lateral walls of the gasket there are provided regions of differential thickness or rigidity.
7. A gasket as claimed in claim 1, characterised by comprising stiffening means, such as bars or rods or blades of rigid material such as metal.
8. A gasket as claimed in claim 7, characterised in that said stiffening means consists of a blade coextruded with the gasket within said tubular seat housing the magnetic material strip, on the opposite side to that gasket face exposed to the magnetic attraction.
9. An internal door, in particular a leaf door to be interposed between communicating spaces within a building and composed of a door frame and a door leaf, characterised by being provided with a gasket in accordance with one or more of the preceding claims, along at least one of the four sides of the door frame and along the corresponding side of the door leaf which faces it when the door is closed.
10. A door as claimed in claim 9, characterised in that seats, such as grooves formed by milling, are provided in the corner regions in which

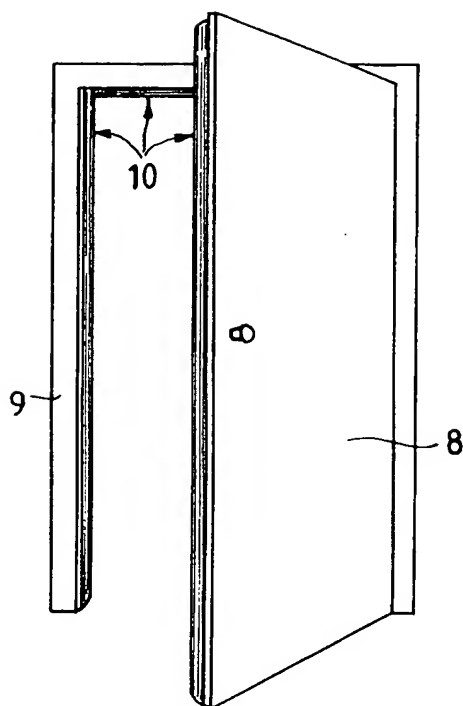


Fig.1

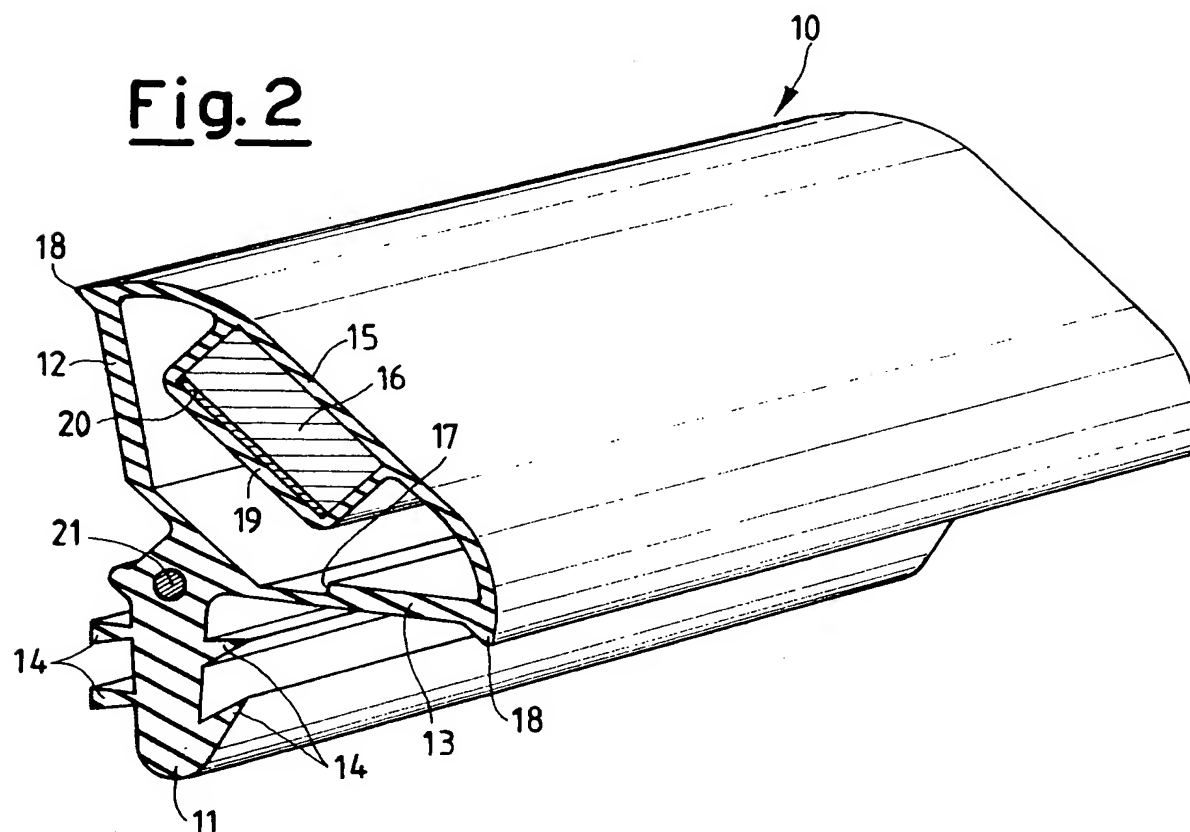
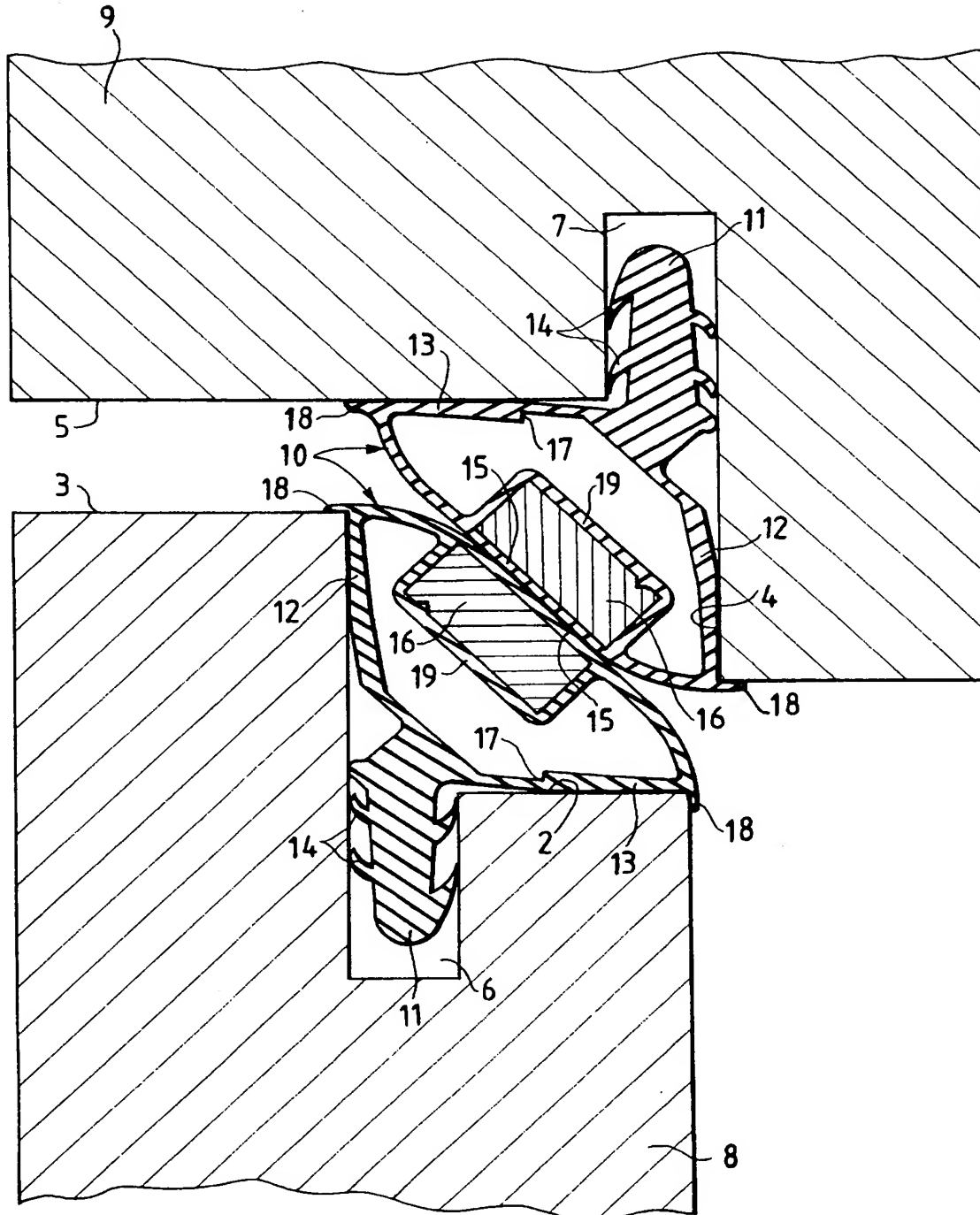


Fig.2

**Fig.3**







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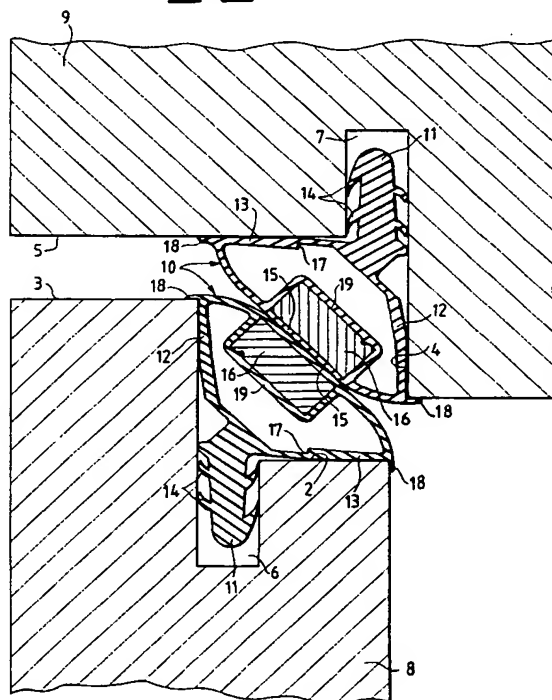
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(54) **Gasket in particular for internal doors.**

(57) The invention provides a gasket (10) for internal doors (8), such as leaf doors (8) interposed between communicating spaces within a building and composed of a door frame (9) and a door leaf (8), characterised by comprising, for fixing said gasket to said door in the corner (10) region in which contact occurs between the door frame and door leaf when in the closed position, a base element (11) from which there extend in diverging directions two lateral walls (12,13) having a certain rigidity but able to yield elastically, and by compression abut against those door parts contained within said corner region, the ends of said lateral walls of the gasket being joined together by a convex upper wall (15) which in its central position assumes the form of a tubular seat for a strip of magnetic material (16), which is hence contained within the space defined between said base element, said lateral walls (12,13) of a certain rigidity and said convex upper wall (15) which joins them together.

**Fig.3**





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## EUROPEAN SEARCH REPORT

Application Number

EP 93 20 0487

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 319 087 (ILPEA) * column 3, line 7 - column 5, line 40; figures * ---	1,2,4,6	E06B7/23
X	US-A-4 947 585 (GUETLE) * column 2, line 34 - column 4, line 27; figures * ---	1,4,6,9, 10	
X	DE-A-2 112 425 (TRUBE + KINGS) * claims; figures * ---	1,3,5,9	
A	GB-A-2 036 840 (DRAFTEX DEVELOPMENT) * page 1, column 66 - page 2, column 97; figures * ---	1,3,5-7	
A	GB-A-831 026 (WESTINGHOUSE ELECTRIC CORP.) * the whole document * ---	1,8	
A	US-A-3 469 349 (MULTER) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E06B F25D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27 SEPTEMBER 1993	Examiner VIJVERMAN W.C.
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons & : member of the same patent family, corresponding document			

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